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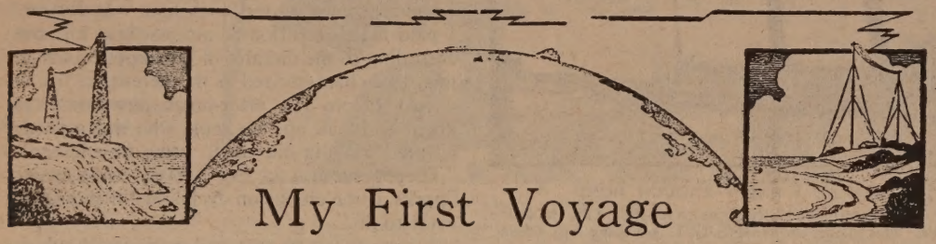
THE HORN SPEAKER

EARLY DAY WIRELESS



My First Voyage As a Sea-goin' Telegrapher

Sea-sickness, Home-sickness, Practical Jokes, Bed-bugs and Shipwreck, If Taken in a Single Dose, are Likely to Make One Sick of the Sea

By A. HENRY

"GOOD MORNING, Sparks!" bellowed the Captain as he grabbed a fried egg in each hand from a platter in the centre of the table and flopped them one on top of the other on his plate. "What kind of a night did you have and how do you feel?"—this last with a twinkle in his eye—"Here's your seat, right beside me, so's I can see that you behave yourself."

"Good-morning, sir," was my reply, "I never felt better in my life and it is a pleasure and honor to occupy the seat next to the Captain."

Whatever possessed me to add the touch of blarney I have no idea, but it must have been a master stroke, for it struck the old fellow just right. Anyone, even as inexperienced as I, could have seen that the Captain was pleased, for his chest went out and he sat straight up on his stool and made room for me to pass behind him.

Possibly you dislike descriptive narrative as much as I do, but in order to let you appreciate the utter ridiculousness of my position, it is necessary for me to ask your indulgence.

Shortly after my father had seen me safely aboard the Standard Oil tug *Astral* (for I had never before been away from home alone), he departed and left me to my own devices. After unpacking my bags and tinkering with the radio equipment for awhile I fell gladly into my bunk and into the arms of Morpheus. Meanwhile, our tug pulled out from the coal dock, picked up the barge we were to tow, at dawn, off Staten Island, and made for the open sea and ports to the south. So, by the time the mess boy poked his hand through my door, ringing a huge bell and bawling "Breakfast, *Breakfast!*" we were well beyond Ambrose Channel Lightship and down the Jersey Coast.

I had jumped up, dressed in a hurry and made every effort to look as presentable as possible, putting on a good suit, a collar and tie and shining shoes which were hardly in need of the attention. The Captain's remarks, as I entered the mess-room, were at once disconcerting and reassuring, for I had expected to find the Captain more sedate—the fact that good nature beamed from every wrinkle of his weather-beaten countenance and that he seemed anything but unapproachable smashed some of the theories about captains that one learns in a radio school.

The mess room (that word "mess" always grated upon my nerves and I could never bring myself to think of "food" and "mess" being at all synonymous and it was very difficult to refrain from calling the room in which the process of eating was accomplished, the "dining-room") was an institution of an entirely new character to me and is, no doubt, to many of the young fellows who leave good homes for a life on the ocean wave. The room itself was located in the forward part of the main deck housing just beneath the pilot house. There were several port holes in the forward bulkhead and two on either side. Entrance could be made through doors from the deck on either side, or through the companionway from the galley——which in everyday language means kitchen. This last was used only in heavy weather. A huge table filled most of the room and chairs were out of the question; we sat on stools. If the sea was the least bit frolicsome, the stools might be found individually or collectively cavorting about beneath the table. After reclaiming one, the reminder that there were others by a crack on the shins invariably resulted in a volume of anything but edifying ejaculations—and a laugh all around. In seas of this sort, racks were put on the table and the cloth put over the racks. The racks occasionally prevented one's plate of soup from unceremoniously becoming tired of being respectable and racing across the table into someone else's lap.

Upon recovering from the temporary embarrassment brought about by the unceremonious reception of the Captain, and seated solidly upon my stool, I was introduced in a general sort of a way to the others at the table.

"Sparks," said the Captain, his fork poised deftly in his left hand and his knife pointing in the direction of a begrimed gentleman whose sole preparation for breakfast could only have been a wash of the "lick-and-a-promise" variety, "that old-looking duffer over there is the Chief Engineer. Engineers ain't good fer nothin' but makin' trouble and this particular one is worse'n most. You'll find out, when you need juice for that wireless business

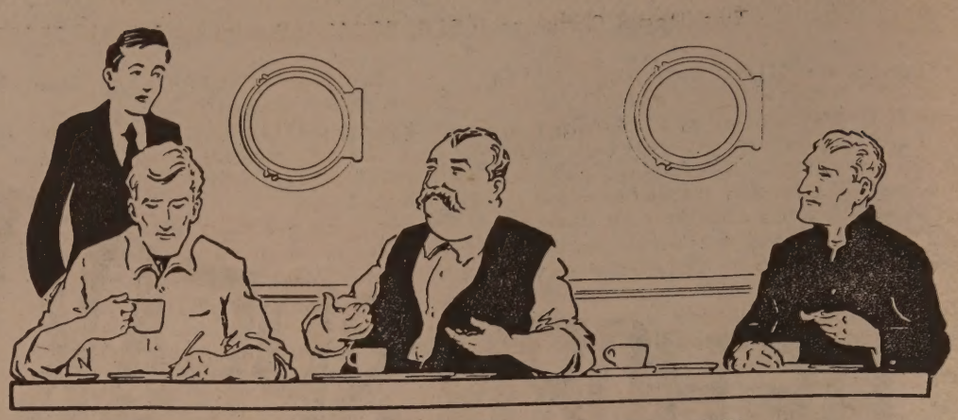
Have You Taken Your First Ship to Sea?

In this article, the author, who has spent many years in radio as an amateur, a sea-going operator, an investigator of long-wave phenomena at high-powered trans-ocean stations, and an instructor in radio at an army officers' training school in the A. E. F., tells of his first trip to sea. There is much about it that one would not relish—but it is life in the rough. One article of this series by A. Henry appeared in RADIO BROADCAST for March under the title, "What About Operating as a Career?" In a third article of this series of true stories about radio as a career, Mr. Henry will tell, next month, of his first passenger assignment. —THE EDITOR.

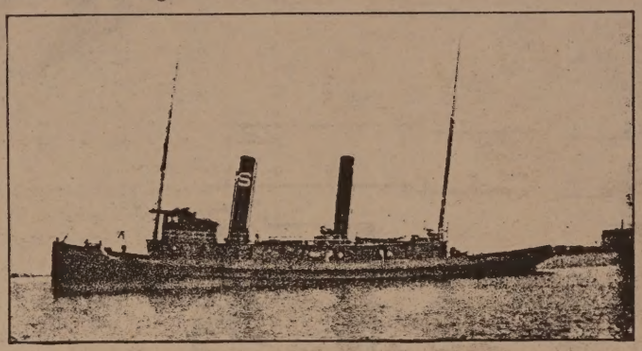
Radio Broadcast 1923

o' yours. If it wasn't for his assistant who's on watch now and that oiler over there—pointing to another gentleman whose upturned coat collar was intended to disguise the fact that he was at the table in his undershirt—this old tub wouldn't ever leave the dock. It's always boiler tubes or spark plugs or somethin' goin' wrong and he don't know what it's all about. Look out for him, boy, he's a bad actor." And with these remarks, stuffing a jellied pancake in his mouth, using his hand for a pusher, he made his departure before the Chief Engineer had time to reply.

Then the Mate came in and occupied the Captain's chair, smiling in my direction and wishing me good-morning. He was entirely different from the other men and reminded me of ads I had seen for young men's clothes. If Douglas Fairbanks had been romping on the screen in those days, no doubt he would have reminded me of him. A young, powerful giant and possibly the only American among the Norwegians and Danes and Englishmen and Skyhoovians who made up our crew. And his speech was as perfect as one would wish. In others words a gentleman. Here, thought I, was one who could teach me much of the world and in language I could fathom. Here was a young man, second in command, who held the respect of his subordinates, some of them twice his age, because he knew his job and even the old salts could not bluff him.



"GOOD MORNING, SPARKS!" BELLOWED THE CAPTAIN
As he grabbed a fried egg in each hand from a platter in the centre of the table and flopped them, one on top of the other, on his plate



EVEN A TUG MAY BE A HAPPY ENOUGH HOME
If a fellow does not mind rearranging his digestion to function with the new variety of food he gets. This picture shows the S. G. T. (sea-going tug) *Astral*

Everything seemed to be going along very nicely. My new acquaintances were surely rough diamonds—but diamonds, none the less.

I went back to my room and listened-in for awhile, finally starting my transmitter and calling the barge we had in tow, which was also equipped with radio. The operator happened to be on and we agreed upon a regular schedule for communicating with each other. Following this we "chewed the rag" a little and signed off.

Most of my morning was spent in roaming about the vessel, "getting the lay of the land" and becoming acquainted with those men who had been on watch at breakfast time. About eleven o'clock, however, I decided to polish some of the bright work on the radio outfit and write a letter or two. On entering my room I found one of the mess boys lying in my bunk, his hands clasped over his stomach and a look of anguish on his pale face.

"Don't put me out, Sparks," he begged, "I'm nearly dead. When do we get to Wilmington?" Then in a terrible fright he pleaded, "Quick! Quick! Air, Sparks, I'm dying."

I dragged him out of the bunk, pushed him toward the door, grabbed him by the shoulders while I straddled his back and braced my feet against the top of the rail to prevent him from falling overboard.

"Gosh!" he sputtered, when it was over; "never so sick in my life. Better now—thanks—guess I'll drift in and get the table ready for lunch." And he walked up the deck after the fashion of one who has lain long in bed. His knees were very wobbly.

I noticed that we were rolling around a little but felt anything but sick. I had a ravenous appetite and waited with some impatience for the dinner bell to sound.

During the course of the morning stroll, I had picked up quite a little sea-going lingo and etiquette. For instance, one of the oilers said that it was customary to wait for the "Old Man" before taking one's place at the table, so under the guise of examining one of the lifeboats, I watched for him to leave his room for the mess room and then followed immediately.

We had soup. Mine was about half finished when I felt a sort of "all gone" feeling in the pit of my stomach. Cold perspiration began to appear on my brow and cold shivers raced up and down my spine. My appetite disappeared like a flash and I could feel the blood leaving my face. A weak feeling came into my knees and I gripped the under side of the table and didn't move. For a moment I felt better and then a thousand per cent. worse. I knew what was coming and excused myself, leaving the table amid a burst of uproarious laughter and mock sympathy, and a hundred suggestions for obtaining relief. I shall draw a veil over the events of the next two minutes. But afterwards, I felt much relieved, and returned to finish my lunch.

They were rather surprised and a little taken aback at my reappearance, but presently suggested many and contradictory remedies to ward off a recurrence of my malady.

"Stuff yourself, Sparks," volunteered the Captain, and the Chief Engineer said, "Don't pay any attention to that old fool, Sparks, he can't even steer a straight course, much less practice medicine. You eat light and an hour after you're through, get a rope and tie it to a bucket. Then drop the bucket over the side and get some sea water and drink two glasses every hour. That's a real cure."

Many other suggestions were made, but for the most part the men in the deck department agreed with the Captain, and the Chief Engineer's men agreed with him. As for me, I paid little attention to any of them and ate according to the dictates of my appetite, which might be characterized as indifferent.

Just before the after-lunch pow-wow was about to break up, the cook, who was a good-natured looking old devil, came in and said, "There's no use in ever gettin' sick again, Sparks, come on out on deck and I'll show you what to do."

Everyone left his seat and made for the deck as though it were a foregone conclusion that I was going to submit to the cook's treatment. The First Assistant Engineer confided, in a whisper, as we passed through the door together, something to the effect that the cook was the best doctor he had ever seen.

So they gathered around in a semi-circle having its opening in the direction of the rail, and the cook took his place beside me, saying, "Here y'are, just swallow this and you'll be all hunky-dory." He offered me a cube of salt-pork almost an inch on a side and to my objection that there was a string tied to it, he said that was to prevent choking if it stuck in my throat. After two unsuccessful trials I got it down and the cook then assumed the attitude of a dentist about to pull a tooth. Holding on to the string he gradually retrieved the piece of pork.

Some one cried, "He's sick, get a bucket." So they got a bucket, dropped it over the side, and a fellow with his arm around my neck offered me a glass brimful of salt water. I drank it, but it, also, stayed on my stomach but a few seconds. If you've ever been sea-sick, you know how I felt, but the treatment, severe as it was, must have been effective, for the wildest of seas never nauseated me again and that evening I enjoyed a good supper.

My radio duties were very light, so I retired early and was soon lulled to sleep by the drone of the engine and unsteady but now pleasant rolling motion. I had seen no sign of a bath tub and because I was too sleepy to have used it any way, inquiry concerning it was, for the time being, postponed.

During the night my sleep was made restless

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by an itchy feeling on my legs and neck. For a time I scratched myself in my sleep but a severe irritation on the back of my neck woke me and my return to consciousness was accompanied by a peculiar bewilderment and I was rolled around like a weighted toy clown as I sat in my bunk and switched on the light. When I woke, the itchiness disappeared so I sat in my chair and listened-in for awhile, gradually becoming sleepy and returning to bed. Before sleep overtook me, the itchy feeling returned and I sat up for another little while. This sort of hide and seek went on for some time until, in scratching one particularly itchy spot, I felt something under my nail. I switched on the light and found that I was holding some sort of a red insect. Quick as a flash I tore the clothes from the bed and there they were —possibly a dozen of them —racing to get away from the light. I became acquainted with some uninvited guests of a species previously unknown to me. They were bed bugs! This part of my experience may best be told by merely stating that the bed was given over to the exclusive use of the nocturnal callers, while the bed clothes, after a thorough shaking, served very comfortably when spread on the floor. (They call the "floor" the "deck" at sea, but it is just as comfortable for sleeping purposes, under either name.)

The next day I inquired for the bath tub and was led to a remote corner of the engine room, where a round wooden wash tub, of the variety used in old-fashioned country places, graced a stick which protruded from one of the steel ribs that held the ship's sides in place. Near by there was a steam pipe which could be swung in any direction. By inserting this pipe in a pail of water and turning on a valve, cold water could be transformed into hot at a moment's notice. It was necessary to carry the water to this "bathroom" from the deck above and the engine room grating and iron stair and lower deck was very slippery. To lose one's balance could result in a too intimate relation with the crank shaft and other heavy parts of the engine. I felt that the degree of privacy was about the same as one would expect in the bleachers at a world's series base-ball game. One soon learns to worry little about such delicacies, on a tug, however, and becomes quite adept at bathing beneath a noisy crank shaft or in a boiler room, emerging equally dirty in either case.

Nothing much happened for the next few days and I began to feel more of a sailor than ever. Plenty of food—of a strange sort to which I was becoming acquainted, for it was of an entirely new variety to me—plenty of sleep, and I was feeling a growing affection for the scribbler who penned the tale of "Life On the Ocean Wave."

At lunch there was some talk about approaching Diamond Shoals Lightship, which is located off Cape Hatteras, reputed among those who know nothing about it as the roughest point on the Atlantic Coast.

"Sparks," said the Chief Engineer, "how would you like to go up in a bos'n's chair and watch for the lightship from the masthead? The skipper will let you, won't you Cap'n?

To which there was an affirmative grunt and a few minutes later I was strapped in the chair and being hoisted up the mainmast by two husky deck hands. The masts on our tug were nearly ninety feet high and the expanse of water with not another vessel in view was a sight to fill one with awe. They permitted me to enjoy the scenery for a while and then began lowering me. The wind was in my direction and heavy black smoke from the stacks blew right at me. When I got to the midst of it they stopped the lowering process and let me enjoy the smoke. No black-faced comedian was ever as black as I, when they eventually did lower me to the deck. Of course they weren't looking for the lightship at all and the Captain and Chief Engineer had framed the joke up before lunch and the firemen produced all the smoke they could.

By the time we did approach Diamond Shoals Light, the head wind had changed to a gale and it took us two days to go four miles. Diamond Shoals remained off our starboard beam for two days and nights. On the third day, the wind abated and once again we were on our merry way, with the storm nothing but a memory. Of course I copied the press from the N. Y. Herald Station at night and HA (Cape Hatteras) in the morning. This, along with a daily message to the Standard Oil Co., the owners of the tug, completed my duties and there was plenty of time for sleep.

Awaking one sunny morning, I found that we were at dock in Wilmington, North Carolina, and there were several letters at my place at the table when I appeared for breakfast. They were all read and re-read before the meal was touched and the next thing to do was to make a combined sight-seeing and shopping tour of the city.

By the time the shopping, which included the purchase of lythia tablets and Peterman's Discovery to purify the ship's water and fight off my nocturnal visitors, it was lunch time and I enjoyed the customary mariner's choice of food after a voyage, namely, ham and eggs. A strange sort of feeling came over me as I sat alone, many miles from home—an experience I had never had before—and it was not wholly unpleasant.

After lunch, a trolley ride, and then back to the ship for supper to find someone to go to the movies with me. Several of us went and there was one of those "home and mother" thrillers being shown to the tune of an automatic orchestra that seemed to delight in playing ragtime regardless of the scene depicted on the screen. Then I became homesick. Just what the sickness is I can't tell you but it is worse than any other malady I've become acquainted with and I've had the "flu" and the malaria fever in Mexico where you get it correctly, and the usual run of unpleasant though popular forms of sickness. I felt like crying and my head felt as though it would split. None of the others seemed to be in any such plight and you may be sure I was glad to get back aboard and asleep.

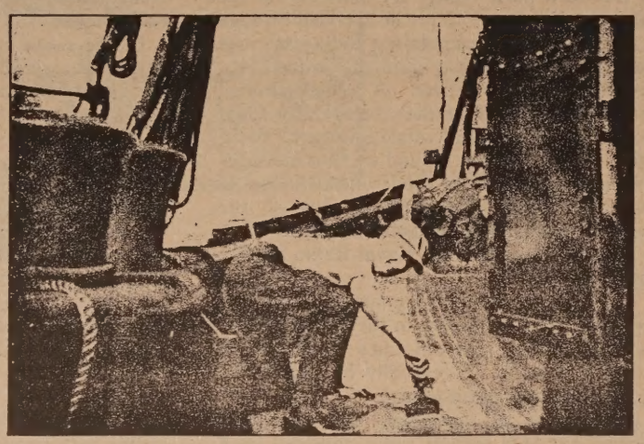
None of the sailors or firemen had gone ashore because the Captain would give them no money. He did give them some the next day, however, despite the fact that we were to sail for Baton Rouge at noon.

My morning was spent writing letters and post cards and taking a few pictures.

One by one, the men began returning in various stages of insobriety. This all occurred some time prior to the passage of the Volstead Act. During lunch, the firemen's and sailors' mess waxed quite noisy but there was no real excitement until the firemen told the mess boy to tell the cook the potatoes were not cooked and they wanted cooked ones. In no uncertain language the cook told the mess boy to give the firemen his compliments and tell them to go to the devil. He, too, had imbibed a bit too freely of the flowing bowl. The mess boy did as he was bidden and a delegation of firemen immediately made their way to the galley to talk it over with the cook. That gentleman lost little time talking and by way of demonstrating his feelings in the matter punctured one fireman's chest with the point of a carving knife. The injured one gave an unearthly yell and several of us ran into the galley in time to see the firemen in the act of setting the cook on top of his stove. Before the Captain could bring order about, the air had become

ON A LINER, HOWEVER

There is so much "going on" socially that it is difficult to know which functions to pass up in order to get enough sleep to be able to stand the hours of watch!



LIFE ON A TUG IS HARDLY LIVELY

And a fellow welcomes an opportunity to paint the deck or shine brass or do any of the things the union might object to

well permeated with the odor of burning flesh.

Here indeed was adventure of the most blood-curdling variety. I was less than two weeks on my trip to experience, and here, before my very eyes, was a man saved from being roasted alive while another had just been stabbed but a few feet from where I was enjoying a mid-day repast. Verily this was Diamond Dick and Nick Carter and Jesse James stuff all rolled into one. It was better than the movies because it was real.

Due to the performance in the galley, our departure was somewhat delayed, but night found us once again in the open sea and bound south.

During the beautiful days that followed I tore down the four bunks in my room and applied so much Peterman's Discovery that I'm afraid he will have to discover a substitute, but all to little avail. One of the sailors sold me a hammock which he told me was made at Sailor's Snug Harbor. That was one of the best investments I ever made, and the only trouble was that the Captain frequently woke me in the morning by upsetting it and dumping me on the floor which he thought a huge joke.

And thus the days rolled by until we approached the coast of Florida when I was made the butt of many a joke, such as bottling water from the Gulf Stream and sealing the bottle. This water was supposed to turn to Florida Water in a month and to have a delightful odor. There was some truth in its being Florida water, I suppose, and after a month it surely had an odor.

In sailing south it is quite customary to pass between the Gulf Stream and the Florida Coast and it is not an uncommon thing for vessels to travel near enough to the shore for those on board to see the famous winter resorts at Palm Beach and Miami as well as people in the surf. We looked forward to this sight and I retired to my hammock somewhat earlier than usual so as to be on hand when the beauty spots were to be seen in the morning.

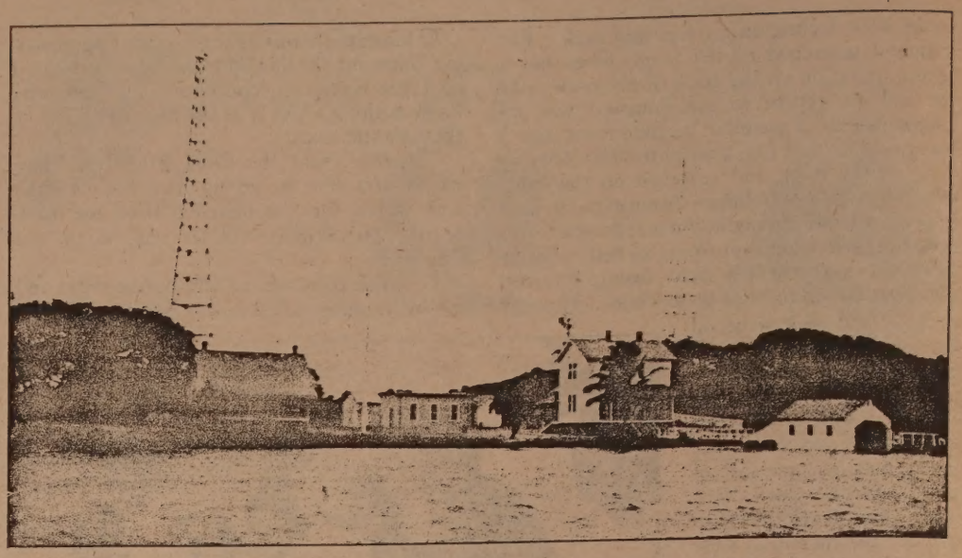
A rather rough hand began swinging my hammock in an uncomfortable up and down motion. I woke and remember saying, "Cut it out! Cut it out!" without so much as opening my eyes.

In a moment or two my hammock was again shaking violently and when I awoke one of the Norwegian sailors with whom I had become quite chummy was tugging at it and calling to me in broken English.

"Spark! Spark!" he shouted, "get up, hurry up, *Astral* run on beach, Captain come in minute wireless for help."

At first I thought it was another hoax but his face surely wore a troubled expression and I was brought to realize the seriousness of the situation by an occasional thud which meant that we were aground and getting a bumping. Grabbing a bath-robe I rushed for the deck where I could hear the roar of the surf breaking on the beach and it seemed but a stone's throw from our vessel to where there was a lighthouse. Men rushed up and down the deck while the mate bawled orders on the after deck and the Captain bawled his from the pilot-house window. The barge we had been towing was closing in on us and looked for a time as though she would ram us, but we saw her, too, pile up on the beach.

Men on the after deck were grappling with hawsers and chains and slice bars in an effort to get the rudder, which had broken, under control, but they were making little headway and every swell drove us against the bottom



THE U. S. NAVAL RADIO STATION AT JUPITER INLET, FLORIDA
This was but a few short miles from the point where the *Astral* struck the beach, yet the SOS rent the ether for four hours before an answer was received

with a sickening thud. I went back to my room and called the barge by radio but could get no answer. The captain sent a message to me by a sailor and wanted it sent to the barge. There was only one way of getting it across and knowing that it was received and that was by sending the code symbols with a light. All the hand flashlights were engaged so there was nothing to do but connect a switch in the line to the main mast light. By standing on the engine room settee with my head poked through a port hole and manipulating the switch, the message was sent and a flashlight on the barge signalled back the answer. A second message from the barge told me that the operator could receive by wireless and would answer by flashlight. That helped a lot and we shot messages from one captain to the other with little loss of time. We were within plain view of the Jupiter Inlet Lighthouse and I made an effort to raise the Jupiter Inlet Naval Radio Station but to no avail.

The Captain came fuming into my room and wanted to send a message to the Naval Station and went into a tantrum when I told him it couldn't be done. Eventually he reappeared and told me to call for help.

I threw on all the power there was and boomed out SOS several times, followed by a message the Captain gave me, telling our position and condition. Then I listened but heard nothing. After repeating this discouraging performance four or five times it occurred to me that my receiving set might possibly be inoperative, though an occasional burst of static did get through. So I called the barge and asked the operator to reply by the flashlight method if he heard me and if he had heard any response to my distress call. The flashlight told me that our signals were very strong but that no replies had been heard. We could not understand the silence of the Navy radio station and my SOS kept droning a periodic tattoo upon the ether for nearly four hours. Then the operator at the Jupiter Inlet Radio Station informed me that they had heard our first call and had followed our operation ever since. They could not reply because of trouble with the gasoline engine that drove their generator.

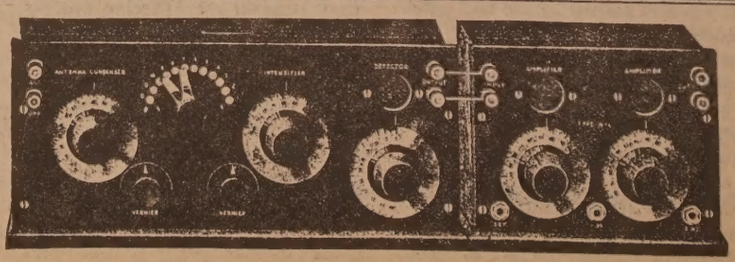
In the meantime, however, they had been able to get another station by land wire and through it had reached a revenue cutter, which was speeding to our relief and had been for nearly three hours.

This news delighted the Captain, who had begun to call radio all sorts of names, not the worst of which was "a useless damn nuisance."

The night was a strenuous one for all hands and it was a great relief to get in communication with the Revenue Cutter *Yamacraw* and later have the beam of her powerful searchlight thrown upon us. Little could be accomplished in the darkness, however, and no great harm could result from waiting until morning.

The cutter had little difficulty in towing the *Astral* and the barge off the beach and then towing both to Jacksonville, Florida, where we spent a few days in the dry dock. They found our tug in worse shape than we expected and, to make a long story short, I was sent back to New York. The only regret I had at my homecoming was that I was out of a job, but that was fairly well repaid by the reception accorded me by my family, to say nothing of the local press which capitalized on a lot of bunk hero business.

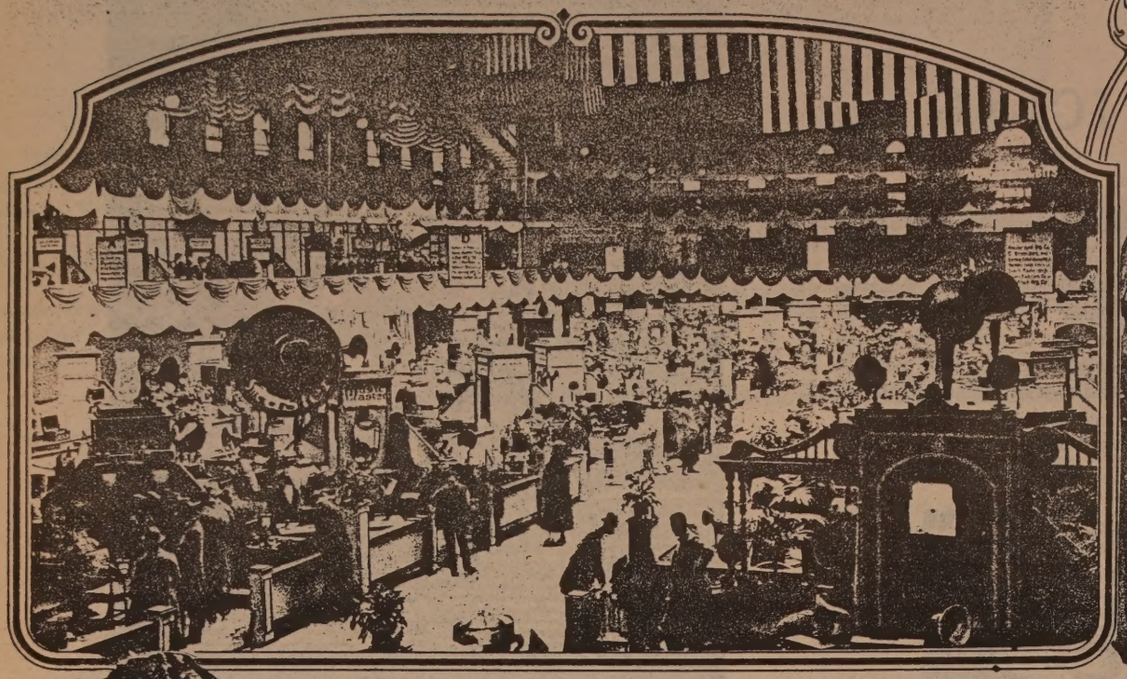
1923



St. Louis, Mo.

ECHOPHONE
Regenerative Radio Equipment

Radio News for December, 1924

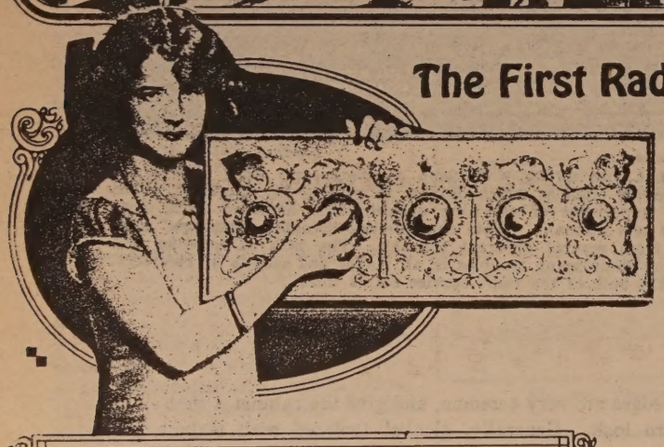


© Kadel & Herbert.

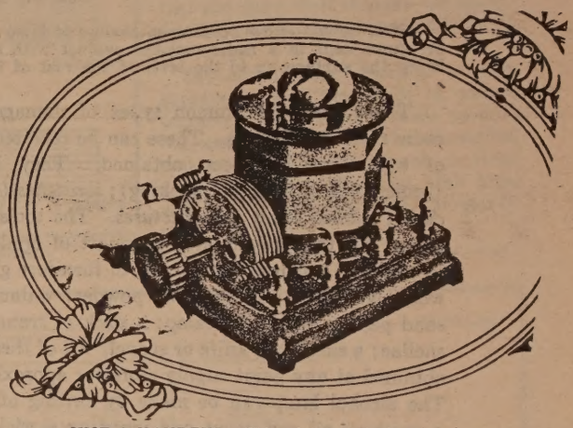
Truly, this is a really good loud speaker, regardless of the fact that the young lady has her hand to her ear. © Kadel & Herbert.

The First Radio World's Fair

1924



A Neutrodyne set with a wrought chased copper panel, built by Mr. Savastano of New York City. © Foto Topics, Inc.



JUST A HANDFUL. This miniature single tube regenerative set of unusual construction works as well as its big brothers. Note the scale engraved on the foremost rotary plate of the variable condenser. The pointer is stationary. © Kadel & Herbert

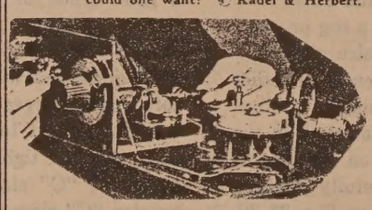
Radio World's Fair Great Success

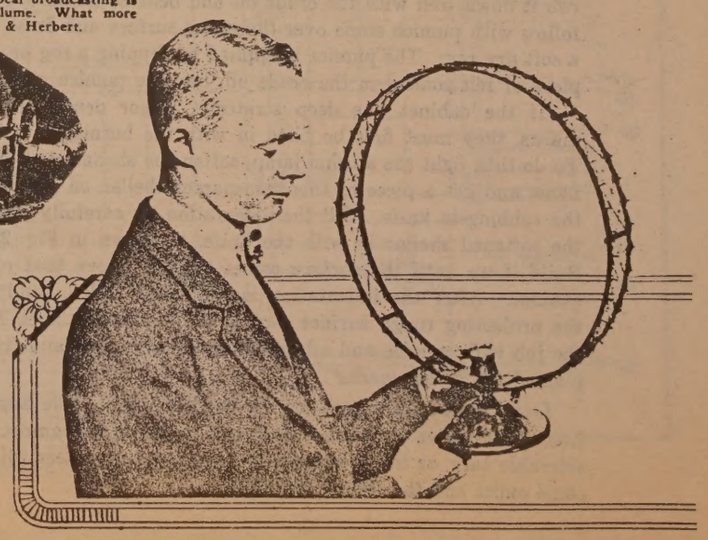
The First Radio World's Fair was a great success from a number of standpoints. The attendance was far greater than was expected, in fact a few of the nights during the exhibition it was found necessary to close the doors at both Madison Square Garden and the 69th Regiment Armory as early as 8:30 o'clock because the crowds were so great. It has been estimated that 175,000 people saw the exhibits. Special details of police were required to maintain law and order. But the success of the Fair was not in the record attendance, but in the volume of business transacted during this period. Eight European countries were represented in the special foreign section and it is understood that their wares were given favorable notice, which of course means business with the United States. Practically every American manufacturer of radio apparatus was represented and many new and novel devices were exhibited for the first time. Neutrodyne sets predominated in the showing of complete receivers and there are so many good ones it is hard for a person to make a final selection of the one he would want.

Any number of contests were held, one of the most interesting being the Homemade Set contest. Some very ingenious and decidedly original outfits were entered. It has been suggested that manufacturers would do well to follow a few points of design incorporated in some of them.

One of the greatest Radio Exhibits ever undertaken

CRYSTAL SET OPERATES LOUD SPEAKER, but a special attachment is necessary. The special apparatus is seen attached to the turn table of the phonograph. The volume obtained on local broadcasting is equal to ordinary phonograph volume. What more could one want? © Kadel & Herbert.





A MINIATURE LOOP AERIAL of singular construction was one of the many interesting exhibits. The frame is moulded out of pyradiolin, a composition similar to bakelite, and the method of winding the turns gives a low distributed capacity. © Kadel & Herbert.

ANTIQUE

RADIO SERVICING

BY

ALFRED A. GHIRARDI, B.S., E.E.

26-66. Repairing and Refinishing Damaged Receiver Cabinets.—The refinishing, and repair of minor damages, to receiver cabinets is a very important part of radio repair work, for the service man who is able to do this work himself can save the cost of complaints, returning scratched or damaged cabinets to the factory, and having marred cabinets spoil the chances of making a sale. In addition, he can refinish and repair the receiver cabinets of his customers at regular service rates.

Courtesy Radio Retailing Magazine

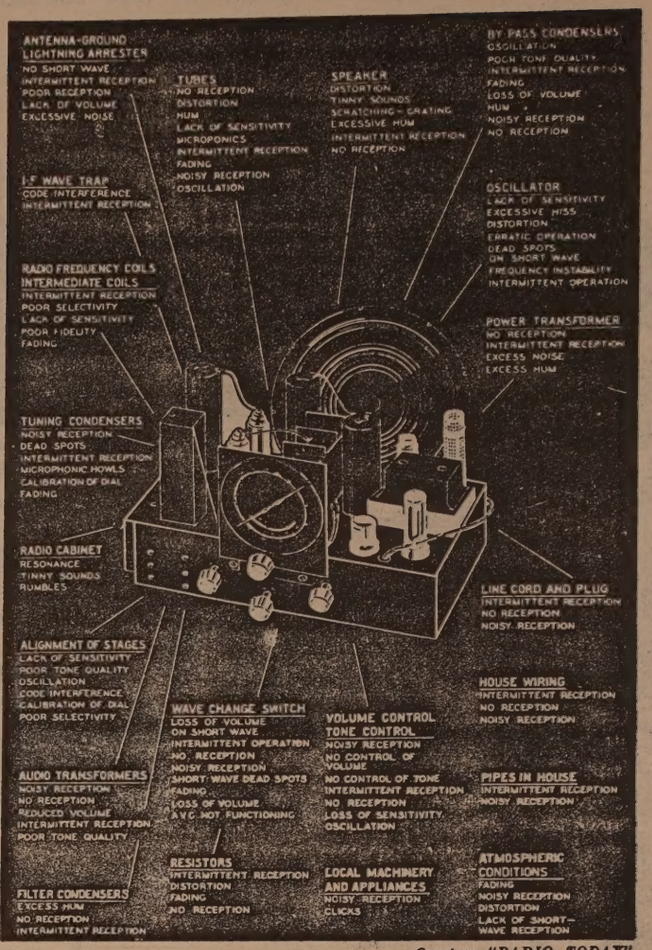
FIG. 26-30.—How burning-in shellac is filled into a deep scratch or minor dent in a radio receiver cabinet with a small penknife to bring the surface up to the level of the rest of the wood.

There are five common types of damages which occur in radio receiver cabinets. These can be repaired easily after a bit of experience has been obtained. They are: *press marks* (bruises due to improper packing); *scratches* (deep and surface); *dents*; *rubbed edges* and *fractures*. The tools and materials required for their repair are: ⅔ quart of crude oil thinned with ⅓ quart of benzine; 1 small can of furniture glue; very fine steel wool, No. 0000 pumice stone powder; walnut stain; No. 0000 sand paper; an alcohol lamp; a stick of transparent, burning-in shellac; a small pen knife or scapel. All of these supplies may be obtained at any paint supply store for approximately one dollar. The alcohol lamp can be made by cutting off the small end of a machine oil can spout and inserting a wick into it so that it dips into the alcohol contained inside. A lamp of this kind may be seen in Fig. 26-30.

If the cabinet has a "press mark" or surface scratches, first rub it down well with the crude oil and benzine mixture. Then follow with pumice stone over the entire surface and finish with a soft dry rag. The pumice is applied by dipping a rag or small piece of felt soaked in the crude oil, into the pumice powder.

If the cabinet has deep scratches, minor dents, or other marks, they must first be filled in with the burning-in shellac. To do this, light the alcohol lamp, soften the shellac stick in the flame and get a piece of this transparent shellac on the side of the rubbing-in knife. Fill the indentation by carefully pressing the softened shellac in with the knife, as shown in Fig. 26-30. Build it up until the surface comes slightly above that of the cabinet. After the indentation is completely filled, sandpaper the projecting rough surface flush with the wood. Then finish the job with pumice and oil in the same manner as already explained for "press marks".

Deep dents may sometimes be swollen flush by the application of hot water or steam. However, this process requires considerable care, or the glue under the top layer of veneer will become moist and the veneer will peel.



Frontispiece *Courtesy "RADIO TODAY"*

What goes wrong with radio receivers—and why! These are the common troubles which develop in present-day receivers, based on the experience of servicing organizations handling more than 100,000 sets annually. Note that similar "trouble symptoms" may result from several different troubles. The task of locating and repairing these many troubles in all makes and models of receivers, forms the bulk of the radio service man's work.

Rubbed edges are very common, and give the cabinet a shabby, shopworn look. Generally, alcohol (colored with walnut, oak or mahogany stain according to the finish of the set) applied along these edges with a piece of felt will suffice. Bottles of these various stains should be kept at hand.

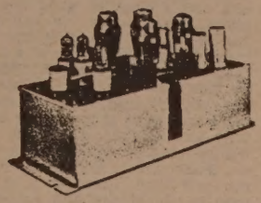
Fractures in radio receiver cabinets may be caused by extremely rough handling during shipment. Splitting and checking may sometimes be caused by the use of improperly seasoned wood in cheap cabinets or by subjecting the cabinet to extreme temperature changes during shipment. Very often, these may be repaired by smearing the surfaces of the split portions with a good grade of furniture glue and clamping them together properly until the glue has set. After the clamps have been put in place, any excess glue should be wiped off carefully with a cloth moistened with hot water. Be careful to insert blocks of soft wood between the clamps and the polished surfaces of the receiver cabinet to prevent denting by the jaws of the clamps when they are tightened. Two or three five-foot adjustable iron rack-type "C" clamps supplemented by a few of the smaller wooden "C" clamps are excellent for this purpose.

1935

To determine the *ratio* of an output transformer, disconnect it from the receiver. Then apply about 2.5 volts a.c. to the *secondary* winding, and measure the voltage developed across the *primary*. The ratio between the two voltages is the transformer ratio.

McIntosh

1949



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1951

50 WATTS (Peak: 100)
50W-2 - $249.50

McIntosh

excerpt from AUDIO ENGINEERING, 1949

To keep waveform distortion and current consumption low in the driver stage, the primary impedance of the driver transformer must be kept above 100,000 ohms from 20 cycles to 30,000 cycles. The response of the transformer from primary to secondary should not show more than a 0.1 db variation from 18 cps to 30 kcs in order to function within a second feedback path in the amplifier. All of these requirements were met by resorting again to the bifilar construction where the input windings are wound together, giving practically 100 per cent coupling independent of frequency.

Figure 9 shows the schematic diagram illustrating the 50W-1 watt amplifier including the phase inverter, volume control and preamplifier. It will be seen from this circuit that the driver output stages are similar to those diagramed in *Fig.* 7. The output transformer provides for 4, 8, 16, and 32 ohms balanced or unbalanced, as well as 600 ohms balanced. It will be noted that the 600-ohm tap is taken off the primary winding connected to the cathodes of the output stage, and since this winding is grounded at its midpoint, neither of these taps (7 and 8) can be grounded. If required, a 600-ohm winding can be supplied separate from any of the other windings of this transformer.

The amplifier is designed in a manner similar to that described for the power supply, namely, that the driver coil and output coil are potted in the box forming the unit, that the top includes a number of sockets which are interwired to provide the proper circuitry and the other elements plug into these sockets to provide the proper amplifier arrangement. This permits easy "substitution method" servicing, fixes the relative position of components, providing for better uniformity in manufacture and permits unusual arrangement features. For instance, the input level to the amplifier is approximately zero db when connected into the phase inverter. The plug-in "preamp" provides an additional 34 db gain, and a triple-shielded input transformer provides an additional 20 to 30 db depending on which input connection is used 30, 150, 600 ohms or bridging input. A control console is available which includes tone control, additional preamps and necessary switching for microphone, phonograph, and radio inputs. An equalizer-amplifier which follows the NAB recording curve and with a gain of 20 db at 1,000 cycles may be plugged into the unit.

Figure 10 illustrates the average performance characteristics of the amplifier. The gain-frequency characteristics may seem abnormally wide, but since it was desired to provide a manufactured product which could be guaranteed to deliver 50 watts at any frequency from 20 to 20,000 cps with less than 1 per cent harmonic or intermodulation distortion, this wide band was found necessary to keep the phase shift reasonably low so that the feedback of the higher fundamental frequencies and their harmonics would be in proper phase relationship to cancel out, and therefore improve the linearity of the amplifier. If the phase shift at the pertinent harmonics is 90 deg. or more, no benefit is obtained from feedback, and since the feedback varies inversely from one at zero deg. phase shift to zero at 90 deg. approximately as the cosine of that angle, it is seen that quite large phase angles are associated even with relatively small losses or variations in the gain-frequency characteristic. For instance, a change in response from 0 db to 0.1 db is inevitably associated with 10 deg. of phase shift. A change from 0 db to 3 db is always associated with a 45 deg. phase shift. It is instantly obvious that if these variations occur at the fundamental, they are substantially more at the harmonic frequencies and, therefore, the effect of feedback is reduced in proportion to the cosine of these phase shift angles. In some cases this may cause instability of the amplifier, particularly where large amounts of feedback are used. Experience has shown that the phase shift begins to be measureable at values 1/7th to 1/10th of the frequency at which the 2 db point shows up on a gain-frequency characteristic. Therefore, the designed bandwidth should be from 7 to 10 times the highest frequency for which it is desired to have distortion less than 1 per cent. The figure shows that the phase shift through the amplifier is substantially zero from 30 to 30,000 cps.

The circuit here described in part appears to open new fields of use or improvement in present fields permiting operation very near the theoretical maximum efficiency and yet provides a high degree of linearity with high stability for either impulse or steady state signals.

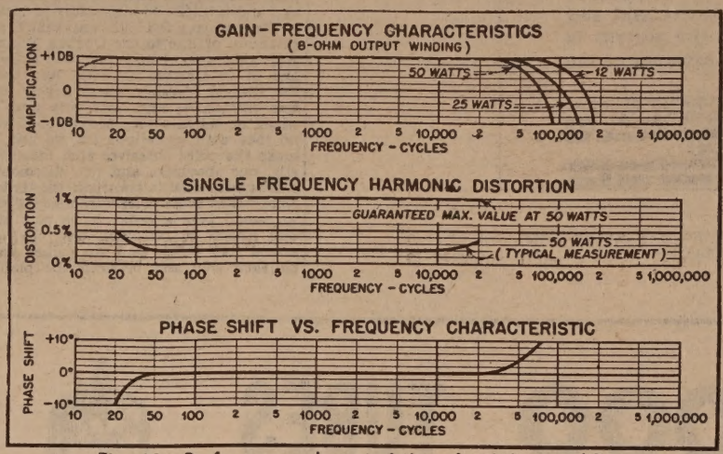

Fig. 10. Performance characteristics of 50W-1 amplifier.

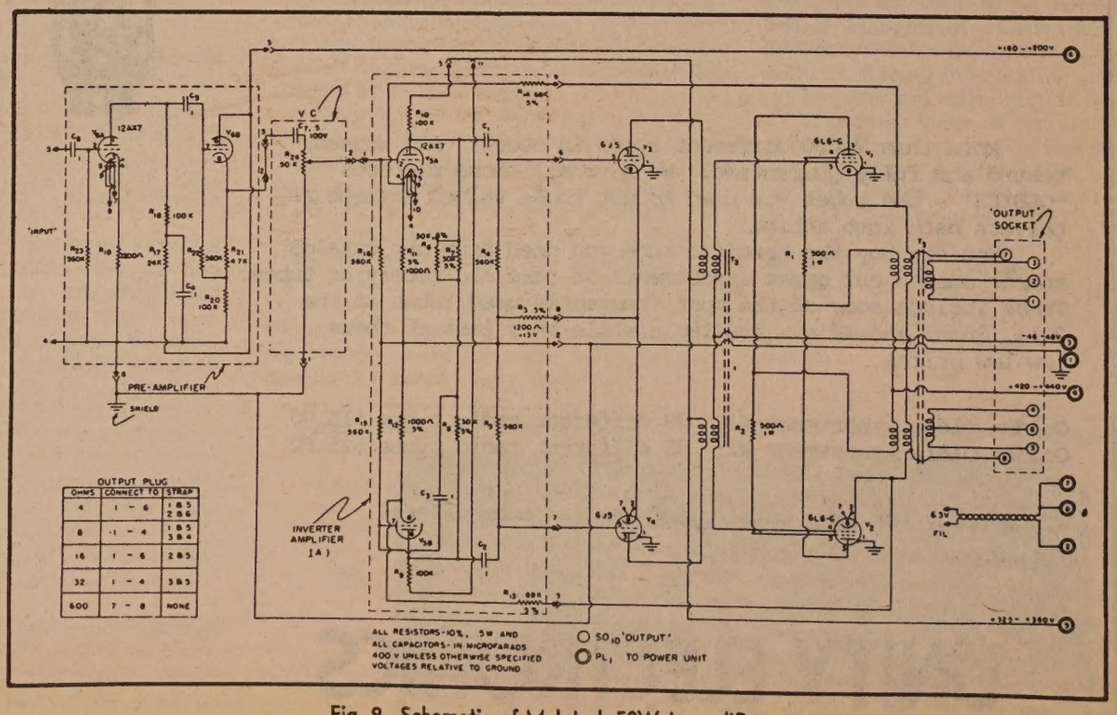
'INPUT'
'OUTPUT' SOCKET
PRE-AMPLIFIER
SHIELD
INVERTER AMPLIFIER (A)
OUTPUT PLUG
OHMS | CONNECT TO | STRAP
4 | 1 - 6 | 1 & 5, 2 & 6
8 | 1 - 4 | 1 & 5, 3 & 4
16 | 1 - 6 | 2 & 5
32 | 1 - 4 | 3 & 5
600 | 7 - 8 | NONE
ALL RESISTORS-10%, 1W AND
ALL CAPACITORS-IN MICROFARADS
400 V UNLESS OTHERWISE SPECIFIED
VOLTAGES RELATIVE TO GROUND
50Ω 'OUTPUT'
PL, TO POWER UNIT

Fig. 9. Schematic of McIntosh 50W-1 amplifier.

TELEPHONY. 1876

AUDIBLE SPEECH CONVEYED TWO MILES BY TELEGRAPH.

PROFESSOR A. GRAHAM BELL'S DISCOVERY—SUCCESSFUL AND INTERESTING EXPERIMENTS—THE RECORD OF A CONVERSATION CARRIED ON BETWEEN BOSTON AND CAMBRIDGEPORT.

The following account of an experiment made on the evening of October 9 by Alexander Graham Bell and Thomas A. Watson is interesting, as being the record of the first conversation ever carried on by word of mouth over a telegraph wire. Telephones were placed at either end of a telegraph line owned by the Walworth Manufacturing Company, extending from their office in Boston to their factory in Cambridgeport, a distance of about two miles. The company's battery, consisting of nine Daniels cells, was removed from the circuit and another of ten carbon elements substituted. Articulate conversation then took place through the wire. The sounds, at first faint and indistinct, became suddenly quite loud and intelligible. Mr. Bell in Boston and Mr. Watson in Cambridge then took notes of what was said and heard, and the comparison of the two records is most interesting, as showing the accuracy of the electrical transmission:—

BOSTON RECORD	CAMBRIDGEPORT RECORD.
Mr. Bell—What do you think was the matter with the instruments?	Mr. Bell—What do you think is the matter with the instruments?
Mr. Watson—There was nothing the matter with	Mr. Watson—There is nothing the matter with

CONTEMPORANEOUS NEWSPAPER ACCOUNT IN *BOSTON ADVERTISER* OF FIRST TELEPHONE CONVERSATION

(MASS.)

MALDEN EVENING NEW

Wm J Pelissier Writes Malden's Early Telephones

Mr Editor:

May I contribute my mite to your very interesting "Historical Column" and perhaps add something to its value. Do you know that the first telephone in Malden was in the office of the Cochrane Carpet Co situated on the land now owned by Eugene A Perry just beyond the end of Barrett Lane. This was a privately owned line and had six stations, three in the Boston offices of Samuel Lawrence, The American Brick Co, and the Cochrane Carpet Co, and three in their respective places in Medford and Malden. I am very sure of this because I helped to erect the line.

I also erected the first telephone line in this city for the Suburban Telephone Co, that was absorbed by the Telephone Despatch Co and it, later, was absorbed by the present New England Tel & Tel Co. That first line of the telephone company came from the Chelsea office and I am quite sure that Henry C Gray who published the Malden Mirror was considerable of a factor in having the company locate here. His press room, then at the foot of Irving ct and his editorial office over what is now Russo's had the first two business phones to be placed by the company. That line from Chelsea was made to do good service and it might be interesting to speak of its construction. It was really an extension of line to the Chelsea Record and went over house tops along Second st in Chelsea to what was then the Everett marshes where a pole line was erected — and that pole line—it would be called a joke today but it was no joke with us fellows for we had to make the poles ourselves and, incidentally, our shoulders and not automobile trucks were used to transport the timber from which those poles were made. First, we would take a cedar fence post and nail planks 20 feet long, and an inch and a half thick, and six inches wide on each side and between the planks about every four feet we would place and nail a block of wood and no mill sawed these blocks; we had to do it ourselves. At the top of the pole between the planks we placed a cross arm that was to hold four porcelain knobs; we didn't use but one. In Everett that line "looped" into what was then Kimball's drug store at the corner of Broadway and Chelsea st. From there it was fastened on trees through Norwood and Bucknam sts to Belmont st in Malden and then down Main st still on trees to Gould ave and across to the tower of the now Eastern Ave Baptist church, then a long swing to the building at the foot of Irving ct which was to have a phone, then up the court to Irving st and across Main st to the room over Sheldon's drug store that was to be the first central telephone exchange in Malden and from there to the office of the Malden Mirror. That was the first so-called "Trunk Line" to Boston. It was afterwards split up and made into a direct line to the Chelsea office.

The first switchboard was very efficiently presided over by Miss Clara Nation (now Mrs Alfred Cast) and when it became necessary to have a night operator, "Jimmie" Blakeslee was the first to fill that position.

The first residential telephone was placed in the home of Leverett D Holden and given the number three—which the Holden family still holds. This telephone connection is without doubht the longest continuous residential telephone service in any one location in the whole world. The next business telephone was placed in the sandpaper works of Wiggin & Stevens on Commercial st just below the factory of Boston Rubber Shoe Co and an extension of that line went to the home of Alderman Devir of Ward two (father of the present mayor) on Pearl st. It might be of interest for you to know that N W Lillie of 1090 Beacon st, Brookline, has used the telephone longer than anyone else in the world. I have the honor to be next.

There are some very interesting stories that might be told of the very rapid increase of the telephone service, but of that, more anon.

W J Pelissier

74 Linden ave, Aug 18, 1936.

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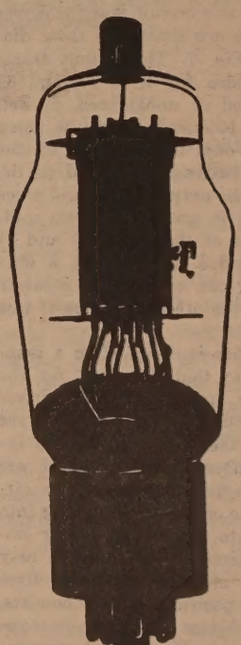

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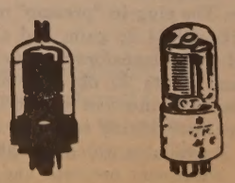

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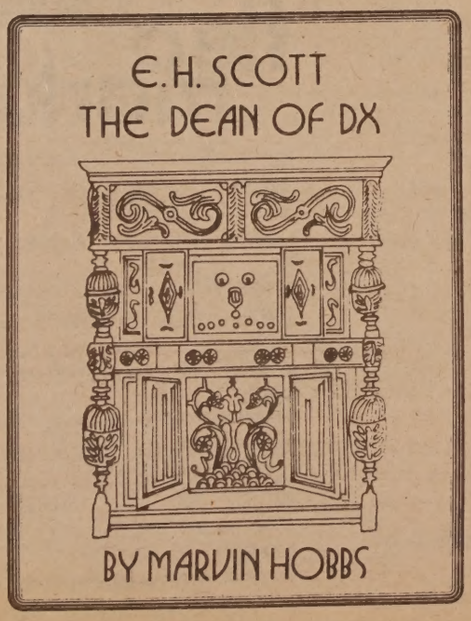

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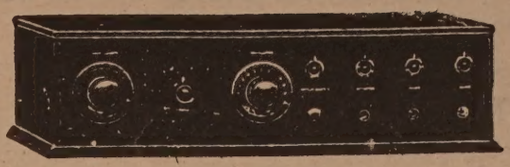

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FOR SALE TUBES, PARTS, KNOBS, DIAL BELTS, RIDER, HOWARD SAMS, RCA, PHILCO SERVICE MANUALS, VOL. CONTROLS, TUBE SOCKETS, TUBE TESTERS, SIGNAL GENS., PANEL METERS, 100'S OF OTHER ITEMS, NO LIST. WRITE WANTS. SASE FOR REPLYS. KRANTZ, 100 OSAGE AVE., SOMERDALE, NJ 08083.

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FOR SALE: 3 ISSUES OF QST- JUNE AND JULY 1917 AND JUNE 1919, GOOD CONDITION. BEST OFFER OR TRADE FOR SW-3. BOB HERBIG, 4178 CHASIN STREET, OCEANSIDE, CA 92056.

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FOR SALE: UNUSED 864/ VT-24 TUBES. $8.00 EACH OR 10 FOR $75.00, JOSEPH D'AIRO, 201 N. RICHMOND AVENUE, MASSAPEQUA, NY 11758.

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ATWATER KENT model 38 receiver with type E horn speaker, working order, $150.00 plus postage, insurance. Madison, WI (608) 257-7267.

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FOR SALE: TUBES, PARTS, SCHEMATICS, custom power supplies. SASE for list to: Los Locos, 1201-74 Monument Blvd., Concord, CA 94520.

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FOR SALE- ALL UNTESTED, PICK UP ONLY, WILL NOT SHIP. SCOTT LABS. CHICAGO 800-B CHASSIS AND POWER UNIT, NO SPEAKERS $75.00, E.H SCOTT RBO CZ6 4 BAND BC AND SW REC. HAVE (3) $75.00 EACH MADE FOR US NAVY. TYPE CMX 46155-A RADIO REC. 15 TO 600 KC $100.00, HALLICRAFTERS SX88 $150.00, MARCONI 6 BAND, MADE IN ENGLAND, PRE WWII, NEEDS REPAIRS $65.00, KRANTZ, 100 OSAGE AVENUE, SOMERDALE, NJ 08083.

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FOR SALE- CATHEDRAL, BATTERY AND A.C. RADIOS. SEND SASE. J. ALBERT WARREN, BOX 279, WAVERLY, PA 18471.

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DX CRYSTAL, ONE TUBE sets, kits, plans, handbooks, coils, supplies. Obsolete tube quotations. Catalog $1.00; none free. Laboratories, 1477-H , Garden Grove, CA 92642.

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ALL ABOUT CRYSTAL SETS. New book by Charles Green shows you how to build crystal set radios. $7.95 ppd USA. ALLABOUT BOOKS, DEPT H, P. O. BOX 4155, Fremont, CA 94539.

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WANTED

WANTED: 1 TUBE SETS, CRYSTAL SETS, GREBE CR EQUIPMENT. RAY GARNER, ROUTE 1, BOX 320, BIG SANDY, TN 38221.

ELECTRO- MEDICAL AND QUACK DEVICES, BOOKS WANTED. INTERESTED IN FLOOR MODELS AND IN DEVICES WITH MULTIPLE KNOBS RESEMBLING RADIOS BUT WHICH ARE NOT RADIOS. I AM ALREADY SATURATED WITH VIOLET RAY DEVICES, SIMPLE 4D BATTERIES. PLEASE DESCRIBE AND PRICE. OLE LINDAN, 1404 DORSH ROAD, CLEVELAND, OH 44121

WANTED: WE ARE LOOKING FOR OLD ELECTRON TUBES. Our buying prices are: 2A3 $6.00 — 45/ 145/ 245/ 345 $10.00 — 50/ 250/ 350 $12.00 — VT-52 $6.00 — VT-62 $4.00 — 202 $10.00 — 203A $10.00 — 210 $10.00 — 211 $10.00 — 224/ 227 $4.00 — 242C $15.00 — 82 $4.00 — 83 $4.00 — 280 $8.00 — 281 $8.00 — 845 $20.00 — 5691/ 5692/ 5693 $6.00. For all the tubes that are originally boxed, especially antique shaped tubes that are RCA boxed, we will pay extra charge of a $1.00 or more. About used tubes please contact us. —— Western Electric brands: VT-1 $15.00 — VT2/ 205B/ D/ E $12.00 — 101D/ F / 102A/ D/ F/ G (only antique glass 101 and 102) $12.00 — 211A/ E $20.00 — 212D/ E $30.00 — 242A/ C $20.00 — 252A $20.00 — 262A/ B $6.00 — 274A/ B $12.00 — 275A $20.00 — 284D $25.00 — 300A/B $50.00 — 301A $8.00 — 339A $8.00 — 350B $15.00 —— P and C Electronics, ICHIBANCHI ICHIGAYADAIMACHI, SHIJUKU, TOKYO, JAPAN, 162

WANTED W. E. ELECTRON TUBES. I buy most everything the Japanese buy, plus a lot more they don't bother with. I pay more, pay faster and I'm easy to contact. Call or write with anything of interest. Charles Dripps, 4331 Maxson Road, El Monte, CA 91732. (818) 444-7079

WANTED: ANY AND ALL INFORMATION on the "Radio-Pen" facsimile receiver by John V. L. Hogan, August 1934 Radio News. Anyone who owned and operated? D'Arcy Brownrigg, P. O. Box 292, Chelsea, Quebec, Canada, JOX 1NO.

We take liberty herewith to introduce ourselves as being a long establisher importer of antique mechanical music. ALWAYS WANTED: VINTAGE AND ANTIQUE RADIO, HORN SPEAKER, VINTAGE T.V., CATHEDRAL RADIO, GRAMOPHONES, PHONOGRAPHS, POLY PHONE, JUKE BOX, CRYSTAL SETS, MUSICAL BOXES, TYPEWRITER, SEWING MACHINES, TELEPHONES, WESTERN ELECTRIC AUDIO PRODUCTS, AMPLIFIER, DRIVERS, HORN AND SPEAKER SYSTEMS, ANY SPARE PARTS, OLD CATALOGUES AND POSTER, AND ALL OTHER OLD MECHANICAL ITEMS. TOP CASH PRICES PAID, Whole collection or single items. We will travel any where to collect, if you have them in hand. Please contact us with prices and photograph to: MR. PIPAT W. POOLPOL, 9 Soonthon Kosa Road, Klong toey, Bangkok 10110 Thailand. Tel. 2863947.

RCA AND AC A.K. CATHEDRAL in very good to mint. AC A.K. Kiel parlor table with original finish, with or without chassis; 5 Zenith knobs for farm radio, page 191 F.O.S., Jeff Vance, 1819 West Rovey, Phoenix, AZ 85015.

WILL PAY IN WD11s or cash for: (1) Crosley 59 chassis, working or not, (2) Radiola 26 battery box, (3) Pre-1924 DeForest items, (4) WWI items, (5) 1920s portables, (6) Radio receptor RF transformer for superhet. Rosenthal, 507 S. Maryland Avenue, Wilmington, DE 19804.

WANTED: PLUG-IN COILS, 4-5-6 PRONG TYPES, WITH GOOD WINDINGS, SINGLES OR SETS. BOB, W6ME, 4178 CHASIN STREET, OCEANSIDE, CA 92056

VU METER for Roberts Reel to Reel Tape Recorder Model 192HT or FT Part No. 54-13. Cecil E. Wallace, 1345 Oak Meadows, Dallas, TX 75232.

ATWATER KENT AK5, AK10, AK12, MAGNAVOX R2, R3, MEAPON CRYSTAL SET. WILL PAY HIGH PRICE IF GOOD CONDITION. 102 KOKUBUHIGHTS, 316-13 YAMAGUCHI, TOKOROZAWA-SHI, SAITAMA-KEN JAPAN.

AAA WANTED: I PAY SAME PRICES FOR all tubes listed by Japanese's ad and also look for Western Electric Amps, Mixers, Consoles, Drivers, Tweeters, Horns, Speakers, Parts, Etc., and Old Tannoy Speakers and McIntosh, Marantz Tube Type Amps. Tel. (818) 576-2642. David, POB 832 Montery Park, CA 91754.

WANTED: VERY GOOD ATWATER KENT model "E" speaker. Quentin Galbraith, 4303 Kingsway, Farmington, NM 87401.

WANTED - WANTED BUYERS (CASH) FOR A 45 YEAR ACCUMULATION AND COLLECTION OF OLD RADIOS, SPEAKERS, TUBES, PARTS, TEST EQUIPMENT, METERS, SERVICE MANUALS AND RADIO PAPER, MAGAZINES, A FEW TRUCK LOADS NO LISTS BUYER TO REMOVE AND TAKE ALONG. KRANTZ, 100 OSAGE AVENUE, SOMERDALE, NJ 08083. (609) 783-0400.

WANTED: KARLSON SPEAKER ENCLOSURE IN RELATIVELY GOOD CONDITION. MARK SKINNER, 1420 ANNA ROAD, PEKIN, IL 61554. (309) 353-1882.

WANTED: BRASS OR FANCY decorated paneled radios, fancy cathedrals, horns in excellent or mint condition, 1 tube sets and WD 11 tubes. Rod Stidham, 4011 South 286th, Auburn, WA 98001.

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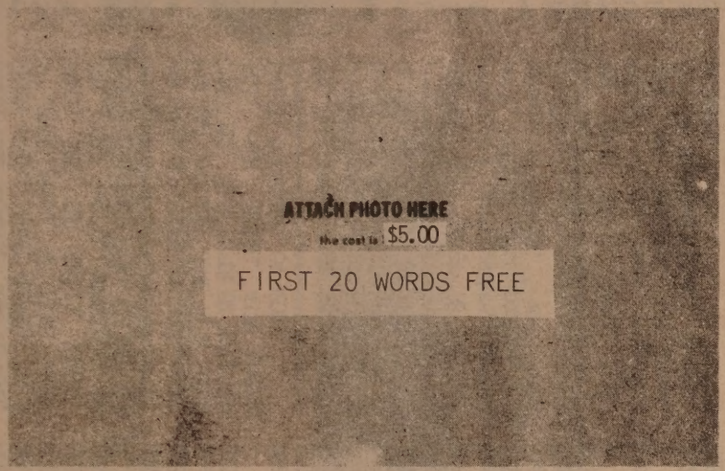

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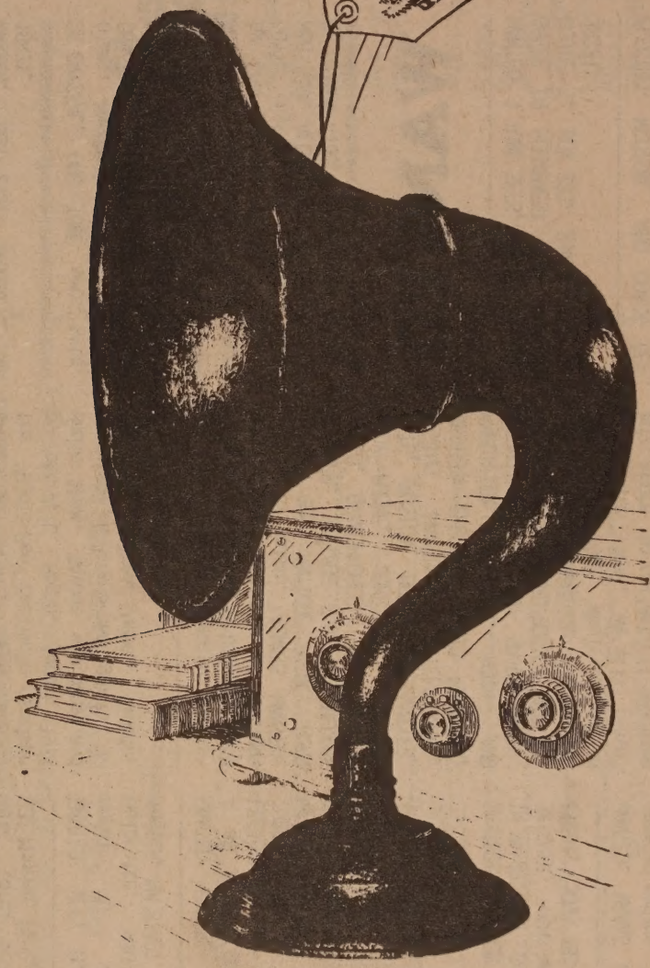

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